DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 70.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-006582
Date Inspected: 01-May-2009

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Japan Steel Works

OSM Arrival Time: 730
OSM Departure Time: 1630
Location: Muroran, Japan

CWI Name: Chung Fu Kuan

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☐ Yes	☑ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: Tower, Jacking, and Deviation Saddles

Summary of Items Observed:

On this date Caltrans OSM Quality Assurance (QA) Inspector Mr. Art Peterson was present during the times noted above for observations relative to the work being performed in Fabrication shop #4 and the Foundry shop at Japan Steel Works.

Fabrication Shop #4

Machining Operation of Saddle: Tower Saddle Segment T1-1 (cast section welded to steel section)

The QA Inspector observed that tower saddle segment T1-1 is located in Machine Shop #4 to have the final machining performed. On this date, the QA Inspector observed that tower saddle segment T1-1 was being re-positioned to perform machining at a different location on the tower saddle segment.

Machining Operation of Saddle: West Deviation Saddle Segment W2-E2 (cast section welded to steel section)

The QA Inspector observed that west deviation saddle segment W2-E2 is located in Machine Shop #2. On this date, the QA Inspector observed JSW personnel were drilling holes in the end section of the rib plate.

Storage of Saddle: West Deviation Saddle Segment W2-E1 (cast section welded to steel section)

The QA Inspector observed that west deviation saddle segment W2-E1 has been moved from Machine Shop #2 to Fabrication Shop #4. On this date, the QA Inspector observed that no work was performed on west deviation saddle segment W2-E1.

Welding Operation of Saddle: Tower Saddle Segment T1-3 (cast section being welded to steel section)

The QA Inspector observed the partial-joint penetration groove root and fill pass weld operation on the rib plate

(steel section) to rib plate (cast section) of tower saddle segment T1-3. The QA Inspector observed Quality Control (QC) Inspector Mr. Chung Fu Kuan verify prior to and during the welding operation that the minimum preheat temperature of 110 degrees Celsius was maintained and the welding parameters of JSW welding personnel Mr. R. Iizuka (06-2643) on weld joint no. 9Y-12U-3- (fill passes), weld joint no. 9Y-5U-2- (root pass, and fill passes), weld joint no. 9Y-5U-3- (root pass) and Mr. M. Kato (08-5018) on weld joint no. 9Y-12U-1- (fill passes), weld joint no. 9Y-12U-2- (root pass and fill passes) and weld joint no. 9Y-5U-1 (root pass) were in compliance with WPS SJ-3012-4 per the SMAW process using LB52A 7016 electrode in the (2G) horizontal position with (4.0) mm diameter electrode on the root pass and (5.0) mm diameter on the fill passes. The QA Inspector observed that the partial-joint penetration groove fill pass weld operation was in process at the QA Inspectors' shift.

Welding Operation of Saddle: West Deviation Saddle Segment W2-E3 (cast section being welded to steel section)
The QA Inspector observed the partial-joint penetration groove fill pass weld operation on the rib plate (steel section) to rib plate (cast section) of west deviation saddle segment W2-E3. The QA Inspector observed Quality Control (QC) Inspector Mr. Chung Fu Kuan verify prior to and during the welding operation that the minimum preheat temperature of 160 degrees Celsius was maintained and the welding parameters of JSW welding personnel Mr. K. Kobayashi (08-5023) on weld joint no. E3Y-4U-1 and weld joint no. E3Y-4U-2, Mr. T. Ohkawa (03-3091) on weld joint no. E3Y-17U-1-(to 90% completion), and Mr. T. Watanabe (08-5153) on weld joint no. E3Y-17U-1-(to 100% completion) and weld joint no. E3Y-17U-2 were in compliance with WPS SJ-3011-6 and WPS SJ-3011-7 per the FCAW process in the (1G) flat position using (1.6) mm diameter TM95 electrode. The QA Inspector observed that the partial-joint penetration groove fill pass weld operation was in process at the QA Inspectors' shift.

Fit-up Operation of Saddle: West Deviation Saddle Segment W2-W1 (cast section being fit to steel section)
The QA Inspector observed JSW personnel are in preparation to performing the fit-up operation of west deviation saddle segment W2-W1 (cast section) to west deviation saddle segment W2-W1 (steel section). The QA Inspector observed the preparation of fitting up the (cast section) to the (steel section) was in process at the end of the QA Inspectors' shift.

NDT Operation of Saddle: Tower Saddle Segment T1-2 (cast section welded to steel section)
The QA Inspector observed Nikko Inspection Services (NIS) Quality Control (QC) NDT personnel Mr. R. Kumagai (#132) performing the ultrasonic test (UT) inspection on complete-joint penetration groove weld joint no. 8Y-5U-1, 8Y-5U-2, and 8Y-5U-3 after the intermediate post weld stress relief heat treatment operation on the rib (cast section) to rib (steel section) of tower saddle segment T1-2. The QA Inspector observed that the ultrasonic inspection was in accordance with AWS D1.5-2002 section 6.13 and to the UT acceptance-rejection criteria- compressive stress in Table 6.4. The QA Inspector observed that Mr. R. Kumagai UT inspection was in process at the end of the QA Inspectors' shift. The QA Inspector performed UT verification inspection on complete-joint penetration groove weld joint no. 8Y-12U-2 after the intermediate post weld stress relief heat treatment operation on the rib (cast section) to rib (steel section) in accordance with AWS D1.5-2002 section 6.13 and to the UT acceptance-rejection criteria- compressive stress in Table 6.4. The QA Inspector was verifying recordable indication data submitted by JSW to Caltrans on UT examination record I.R. No. SF-3402 UT4 in which the NIS (QC) NDT personnel Mr. K. Kobayashi rated the recordable indications as "Class C" acceptable indications. See Ultrasonic Test Inspection Report TL-6027 dated May 1st, 2009 for details of equipment used and locations of inspection on tower saddle segment T1-2.

Grinding Operation on Saddle: West Deviation Saddle Segment W2-W2 (steel section)

The QA Inspector observed that JSW personnel were performing the grinding operation on the ends of the weld where the run-off plates were removed from the partial-joint penetration groove weld operation on the rib plate to stem plate of west deviation saddle segment W2-W2. The QA Inspector also observed that JSW personnel were grinding the finished welds to an acceptable profile prior to Quality Control (QC) Inspector Mr. Chung Fu Kuan performing a visual inspection in accordance with the approved shop drawings and AWS D1.5-2002 section 3.6 (weld profiles). The QA Inspector observed that the grinding operation was in process at the end of the QA Inspectors' shift.

Temporary attachments on Base Plate of Saddle: West Deviation Saddle Segment W2-W3 (steel section)

The QA Inspector observed JSW welding personnel Mr. Y. Ohta (08-2017) welding temporary attachments per the FCAW process in the (3F) vertical position to the edge of the base plate and to the edge of the fixture of west deviation saddle segment W2-W3. The purpose of welding the temporary attachments to the edge of the base plate and to the edge of the fixture is to hold the base plate into position when the JSW personnel start locating- (fit-up and tack-weld) the stem plate and rib plates into their respective positions to the base plate. The Quality Control Inspector Mr. Chung Fu Kuan informed the QA Inspector that JSW uses their in-house weld procedure specifications to perform the welding of the temporary attachments at specific locations to the edge of the base plate. These specific locations have excess base metal material which will subsequently be machined off. The QA Inspector observed that the welding of the temporary attachments to the base plate of west deviation saddle segment W2-W3 was in process at the end of the QA Inspectors' shift.

Foundry Shop:

Storage of Saddle: West Deviation Saddle Segment W2-W2 (cast section)

The QA Inspector observed that west deviation saddle segment W2-W2 (cast section) is located in the Foundry Shop for storage until west deviation saddle segment W2-W2 (steel section) is ready for the fit-up operation. On this date, the QA Inspector observed that no work was performed.

Grinding Operation on Saddle: East Saddle E2-E1 (cast saddle)

The QA Inspector observed that JSW personnel were not performing the grinding operation on this date of the shaped areas on the outside of the trough section and on the rib sections where previously the excess removal of cast material- (scarfing operation by the air-carbon-arc method) on the rough casting was performed on east saddle E2-E1. The purpose of the grinding operation is to profile the areas to a smooth finish and for subsequently the NDT operation. The JSW representative Mr. Hideaki Kon informed the QA Inspector that the grinding operation would resume at a later date.

Repair Operation pending on Saddle: East Saddle E2-W1 (cast saddle)

The QA Inspector was informed by JSW Representative Mr. Hideaki Kon that JSW personnel will perform the gouging operation (air-carbon arc method) of discontinuities marked up by Nikko Inspection Services (NIS) QC NDT Personnel Mr. H. Kohama (#86) from the magnetic particle test (MPT) inspection and the ultrasonic test (UT) inspection on the outside of the trough section and rib sections of east saddle E2-W1 (cast section). The QA Inspector observed that the gouging operation has not started on this date.

NDT Operation on Saddle: West Deviation Saddle Segment W2-W3 (cast section)

The QA Inspector observed Nikko Inspection Services (NIS) QC NDT personnel Mr. A. Seino (#82) performing

the magnetic particle test (MPT) inspection (wet method) on west deviation saddle W2-W3 (cast section) on the as finished surface of level (1) areas as shown on the plans on the outside of the trough section and of level (3) areas as shown on the plans on the rib sections of the west deviation saddle. The NIS QC NDT Inspector verified the lifting force of the yoke and the sensitivity of the yoke as per ASTM E709 prior to the start of the MPT inspection. The QA Inspector also verified that the bath concentration of the non-fluorescent particles were between (1.2 and 2.4) mL per (100) mL as per ASTM E709 Section 20.6.3 and the manufacturer recommendations. The actual settling volume was recorded at (2.1) mL as measured using a pear shape centrifuge tube with a (1.5) mL stem and after allowing the particles to settle for approximately (30) minutes prior to taking the settling volume measurement. The QA Inspector observed that the MPT inspection performed by Mr. A. Seino was in process at the end of the QA Inspectors' shift.

Machining Operation of Saddle: West Jacking Saddle (cast saddle)
The QA Inspector observed that the west jacking saddle is located in Machine Shop #2. On this date, the QA Inspector observed JSW personnel were machining / milling the surface on one end of the rib section on the west jacking saddle.

Unless otherwise noted, all observations reported on this date appeared to be in general compliance with applicable contract documents.

Summary of Conversations:

No significant conversations were reported on this date.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Nina Choy, 510 385-5910, who represents the Office of Structural Materials for your project.

Inspected By:	Peterson,Art	Quality Assurance Inspector
Reviewed By:	Lanz,Joe	QA Reviewer